

User Command Interface

The following outlines the format for users to interface with the NSBF command management system.

User Interface Port Configuration

Default is 1200 baud, no parity, 8 bits, 1stop bit.

To change the baud rate for a particular science group:

- 1) Select Main|Modify Science Port Settings.
- 2) Select baud rate. (1200, 2400, 4800, 9600)
(Baud rate does NOT affect rate of outgoing commands.)
- 3) Press F12 to accept changes.

User Command Request Packet

This packet should be used by the user to request that user commands be sent to the CIP/payload. This packet is sent from the user computer to either the local or remote GSE computer.

Users are not allowed access to command NSBF balloon control systems.

Syyyy(SP)xxqSyyyy(SP)xxqSyyyy(SP)xxq(CR)(LF)

S (ASCII 53h)

yyyy - four character command (hex)

space (ASCII 20h)

xx - address in hex

space (ASCII 20h)

q - either W (ASCII 57h) for data word or K (ASCII 4Bh) for discrete

repeat above twice

carriage return (ASCII 13h)

line feed (ASCII 10h)

Discrete Command Example for Address 12h, Command 13h

S0013 12KS0013 12KS0013 12(CR)(LF)

Datword Command Example for Address 12h, Command AB03h

SAB03 12WSAB03 12WSAB03 12W(CR)(LF)

User Command Verification Packet

The command management system will return this packet to the user to verify that a user command request packet has been received and the command has been sent. This does not verify that the command was received by the CIP, only that the command was sent to the transmitter.

XX/YYYY/00:00:00(CR)(LF)

XX - address in hex

/ (ASCII 2Fh)

YYYY - command in hex

/ (ASCII 2Fh)

00:00:00 - time command was sent (GMT)

carriage return (ASCII 13h)

line feed (ASCII 10h)

Error messages will be returned if the command is not formatted properly. The error messages are formatted as follows:

S -ERROR(SP)00:00:00(CR)(LF)	general error
C -ERROR(SP)00:00:00(CR)(LF)	address greater than 1Fh
1 -ERROR(SP)00:00:00(CR)(LF)	repetitions not equal

Example for Properly Formatted Command from Science GSE

Address 12_h, Command 13_h - 12/0013/12:20:45(CR)(LF)

Address 12_h, Command AB03_h - 12/AB03/12:20:46(CR)(LF)

Example for repetitions not equal

S-ERROR 12:20:50(CR)(LF)

User Single Line Interface

The following outlines the format for an optional single line interface which passes balloon location and command echo information to the user. The information is sent on the same serial line used by the user command interface and does not interfere with this capability. The normal command verification is still provided to the user, in addition to the command echo data.

CIP Location Interface

If the single line interface is enabled, this information is sent to the user at 5 or 10 second intervals. If the selected GPS is updating, a packet will be sent every time a GPS packet is received (roughly every 5 seconds.) If the selected GPS is not updating, a packet will be sent every 10 seconds with the last data received from the CIP.

HH:MM:SSLLLLLmmm.mLLLLLmmm.maaaaaaaaapppppp.ppprrrrrrsssshhhttttt.t(CR)(LF)

HH:MM:SS	Time (GMT)	(00:00:00)
LLLLLmmmm.m	Latitude (degrees minutes.decimal_seconds)	(%5d%5.1f)
LLLLLmmmm.m	Longitude (degrees minutes.decimal_seconds)	(%5d%5.1f)
aaaaaaa	GPS Altitude (ft)	(%8d)
ppppp.p	Pressure Altitude (millibars)	(%10.3f)
rrrrr	GPS Ascent Rate (ft/min)	(%6d)
ssss	Speed (knots)	(%4d)
hhhh	Heading (degrees)	(%4d)
ttttt.t	Air Temperature (C)	(%8.1f)
	carriage return	(ASCII 13h)
	line feed	(ASCII 10h)

CIP Command Echo

If the single line interface is enabled, every command echo received from the CIP will be sent to the user in the format described below. The command echo indicates the last command received by the CIP.

ECHO/XX/YYYY/00:00:00(CR)(LF)

ECHO - ascii text to denote echo of command received by CIP
 XX - address in hex
 / (ASCII 2Fh)
 YYYY - command in hex
 / (ASCII 2Fh)
 00:00:00 - time command echo was received by GSE (GMT)
 carriage return (ASCII 13h)
 line feed (ASCII 10h)

Example

HH:MM:SS	deg	min.	decimal_sec	deg	min.	decimal_sec	GPS alt (ft)	Pressure Alt (mb)	Ascent rate (ft/min)	Speed (knots)	Heading (deg)	Air Temp (C)
19:56:06	56	51.5	101	3.9	924	929.044	0	0	0	999.9		
19:56:11	56	51.5	101	3.9	924	929.044	0	0	0	999.9		
20:20:16	56	51.5	101	3.9	924	929.044	0	0	0	999.9		

Example cip command -> address 04 Dataword command 61

S0061 04WS0061 04WS0061 04W (Sent by scientist computer to gse)

Echo from GSE (Indicates GSE received valid command and sent to cip)
address

command	time
04/0061/20:20:20	

20:20:21	56	51.5	101	3.9	924	928.712	9	0	0	999.9
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CIP echo received by CIP and through telemetry

Echo designator

address	Command (octal)	Time stamp
ECHO/04/0161/20:20:22*		
ECHO/04/0200/20:20:22*		

Example cip command -> address 04 Discrete command 61

S0061 04KS0061 04KS0061 04K (Sent by scientist computer to gse)

Echo from GSE (Indicates GSE received valid command and sent to cip)
address

command	time
04/0061/20:20:20	

CIP echo received by CIP and through telemetry

Echo designator

address	Command (octal)	Time stamp	*<cr><lf>
ECHO/04/0061/20:20:22			*

Enabling/Disabling the Single Line Interface

The single line user interface can be enabled or disabled for any of the four ports available for user commanding. If the interface is disabled, the user will still be able to command using the same port.

To enable/disable the interface:

- 1) Select Main|Modify Science Port Settings.
- 2) Turn science ports on or off. Select baud rate.
- 2) Press F12 to accept changes.

Choosing Data to Send to Science Single Line Interface

The single line interface can be sent data from the computer it is connected to (called "local" for this discussion) or from a "remote" computer connected to the remote through a cable or modem connection.

To select which data is being sent:

- 1) Select Main|Modify Science Port Settings
- 2) Press F8 to choose between Local and Remote.
- 3) Press F12 to accept changes.